

TITLE OF THE INVENTION

[0001] Pool Cue Weighting System

CROSS-REFERENCE TO RELATED APPLICATIONS

[0002] This application claims benefit of U.S. Provisional Patent Application 60/441,043,
5 "Pool Cue with Multiple Weight Bolts", filed January 17, 2003.

BACKGROUND OF THE INVENTION

[0003] The present invention relates generally to the game of pool, and more particularly to pool cues.

[0004] Pool cues are well known in the art. It is known to provide a weight bolt in a butt or
10 handle portion of a pool cue to tailor the weight of the pool cue to a user's personal preferences. It is further known in the art to adjust the position of such a weight bolt within the handle to optimize the balance of the cue to the user's personal preferences. Typically, to increase the weight of the cue, a weight bolt of increased length is installed in the pool cue handle portion. Thus, the pool cue retailer must retain an inventory of numerous different weight bolts of
15 varying lengths (corresponding to varying weights) in order to accommodate the full range of weights a customer might desire. A need exists, therefore, to accommodate the full range of weights a consumer might desire in a pool cue, while also minimizing the inventory of parts required to accommodate that full range of weights.

BRIEF SUMMARY OF THE INVENTION

20 [0005] Briefly stated, in a first aspect the invention is a weighting system for a pool cue having a handle portion and a shaft portion, the handle portion having a terminal end. The weighting system comprises an internal cavity proximate the terminal end. A plurality of weights are removably installed within the internal cavity. The weights are capable of being individually removed to incrementally reduce the total weight of the pool cue to a desired level.

25 [0006] In a second aspect, the invention is a weighting system for a pool cue having a handle portion and a shaft portion, the handle portion having a terminal end. The weighting system comprises a first internal cavity in the handle portion proximate the terminal end and having an internally threaded wall. A plurality of externally threaded rods are provided. Each rod has: a predetermined diameter; a first end and a second end; and a tool fitting formed within
30 at least the first end. The threaded rods are adapted for threaded engagement with the internally

threaded wall. The first internal cavity is of sufficient length to accommodate installation of multiple threaded rods therein.

[0007] In a third aspect, the invention is a weighting system for a pool cue having a handle portion and a shaft portion, the handle portion having a terminal end. The weighting system
5 comprises an internal cavity in the handle portion proximate the terminal end. The cavity has a total length, a closed end and an open end. A plurality of rods are provided, each of the rods having a length. A plug is provided, at least a portion of the plug being adapted to be releasably received in the internal cavity. The rods are slidingly received within the cavity. The rods are held in place within the cavity by the plug. The first internal cavity is of sufficient length to
10 accommodate installation of multiple rods therein.

[0008] In a fourth aspect, the invention is a method of tailoring weight characteristics of a pool cue to preferences of an individual user. The method comprises the steps of: providing a pool cue having a handle portion and a shaft portion, the handle portion having a terminal end, and an internal cavity proximate the terminal end; providing a plurality of weights removably
15 installed within the internal cavity, and individually removing the weights to incrementally reduce the total weight of the pool cue to a desired level.

[0009] In a fifth aspect, the invention is a method of tailoring weight and balance characteristics of a pool cue to preferences of an individual user. The method comprises the steps of: providing a pool cue including a handle portion and a shaft portion, the handle having
20 a terminal end and an internal cavity in the handle portion proximate the terminal end, the internal cavity having an internally threaded wall; providing a plurality of externally threaded rods, each rod having the same predetermined diameter, a first end, a second end and a tool fitting formed within at least the first end; installing a sufficient number of the plurality of externally threaded rods within the internal cavity to provide the pool cue with the weight
25 characteristics in accordance with the user's preferences; and positioning the sufficient number of threaded rods within the internal cavity to provide the pool cue with the balance characteristics in accordance with the user's preferences.

[0010] In yet a sixth aspect, the invention is a method of tailoring weight characteristics of a pool cue to preferences of an individual user. The method comprises the steps of: providing a
30 pool cue including: a handle portion and a shaft portion, the handle having a terminal end; an internal cavity in the handle portion proximate the terminal end, the internal cavity having a closed end and an open end; and a plug releasably received in the open end of the internal

cavity. Additional steps include providing a plurality of weight rods; removing the plug from the open end of the internal cavity; installing a sufficient number of the plurality of weight rods within the internal cavity to provide the pool cue with the weight characteristics in accordance with the user's preferences; and replacing the plug to secure the weight rods within the internal
5 cavity.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0011] The following detailed description of a preferred embodiment of the invention will be better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention, there are shown in the drawings embodiments which are presently
10 preferred. It should be understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown.

[0012] In the drawings:

[0013] Fig. 1 is a side elevational view of a handle and shaft portion of a pool cue in accordance with a first preferred embodiment of the present invention;

15 [0014] Fig. 2 is an exploded elevational view of components installable within the handle portion of the pool cue of Fig. 1;

[0015] Fig. 3 is an end view taken along line 3-3 of the terminal end of the handle of the pool cue of Figs. 1 and 2, showing a threaded rod installed within a first internal cavity;

[0016] Fig. 4 is a cross-sectional view of the terminal end of the handle of the pool cue
20 taken along line 4-4 of Fig. 3;

[0017] Fig. 5 is a cross-sectional view of a terminal end of a handle of a pool cue in accordance with a second preferred embodiment of the present invention;

[0018] Fig. 6 is a cross-sectional view of a terminal end of a handle of a pool cue in accordance with a third preferred embodiment of the present invention;

25 [0019] Fig. 7 is a flowchart illustrating a series of steps associated with a second preferred method of using the pool cues of Figs. 1-4.

[0020] Fig. 8 is a flowchart illustrating a series of steps associated with a first preferred method of using the pool cue of Figs. 1-6; and

[0021] Fig. 9 is a flow chart illustrating a series of steps associated with a third preferred
30 method of using the pool cue of Figs. 5 and 6.

DETAILED DESCRIPTION OF THE INVENTION

[0022] Certain terminology is used in the following description for convenience only and is not limiting. The words “right”, “left”, “top”, and “bottom” designate directions in the drawings to which reference is made. The words “interior” and “exterior” refer to directions towards and away from, respectively, the geometric center of the pool cue or designated parts thereof. The terminology includes the words above specifically mentioned, derivatives thereof
5 and words of similar meaning.

[0023] Referring to the drawings, wherein like referenced numerals are used to designate the same components throughout the figures, there is shown in Figs. 1-6 a pool cue in accordance with three presently preferred embodiments of the present invention. The pool cue
10 10 comprises a handle portion 12, a shaft portion 14 and an end cap 20. The artisan will recognize that it is known in the art to provide pool cues 10 wherein the handle 12 and shaft 14 are integrally formed as one piece, or the handle 12 and shaft 14 may be two or more separate pieces. The present invention may be used with all types of known conventional pool cues. The handle 12 includes a terminal end 12a. As described below, the end cap 20 is releasably
15 received within the handle 12.

[0024] With particular reference to Figs. 3 and 4, a first embodiment of a first generally axially extending internal cavity 26 is provided in the handle 12 proximate the terminal end 12a. The first cavity 26 is generally cylindrical, has an open end and a closed end, and in this first embodiment 26 has an internally threaded wall. The internally threaded wall may either be
20 formed by threads cut into the handle itself (typically fabricated from wood), or alternatively, an insert (not illustrated), preferably formed of a durable metallic material such as bronze or steel, could be installed within the first cavity to provide the internally threaded wall.

[0025] As indicated in Figs. 2-4, a plurality of externally threaded rods 30 are adapted for threaded engagement with the internally threaded wall of first internal cavity first embodiment
25 26. The first cavity 26 and the internally threaded wall are of sufficient length to receive a plurality of threaded rods 30, preferably at least three threaded rods 30, as described below.

[0026] Each threaded rod 30 has the same predetermined diameter. In a preferred embodiment, the threaded rods 30 are about three-eighths of an inch in diameter. The rods 30 preferably range in length from about one inch to about two inches long. The rods 30
30 preferably range in weight from about one-half of an ounce to about one ounce. Each rod 30 has a first end 30a and a second end 30b. A tool fitting 32, for example a screw slot adapted for use with a flat head or Phillips head screwdriver, is formed in at least the first end 30a. The

threaded rods 30 are preferably fabricated from relatively dense, easily machined materials such as a metal alloy.

[0027] With particular reference to Figs. 3 and 4, a second generally axially extending internal cavity 22 is provided in the handle portion terminal end. The second cavity 22 is axially aligned with the first cavity 26, and is located between the terminal end 12a and the first cavity 26. The second cavity 22 includes an end wall 24. The end cap 20 is releasably received in the second cavity 22. In the embodiment illustrated, the end cap 20 includes a plurality of flexible external ribs 20a, which provide an interference fit with the circumferential wall of the second internal cavity 22 to releasably connect the end cap 20 to the pool cue 10. In an alternative embodiment, the end cap 20 and circumferential wall of the second internal cavity 22 could be threaded, and the end cap 20 retained in the handle 12 by threaded engagement. The end cap 20 may be fabricated from a polymeric, metal or wood material or a combination thereof.

[0028] With reference to Fig. 5, a second embodiment of the pool cue 10', having a second embodiment of the first internal cavity 26', is shown. In the second embodiment cavity 26', the internal wall is preferably smooth, rather than threaded.

[0029] With reference to Fig. 6, yet a third embodiment of the pool cue 10'', having third embodiment first internal cavity 26'', is shown. In the third embodiment cavity 26'', a first portion 26a'', proximate the closed end, is unthreaded, while a second portion 26b'', proximate the open end of the first internal cavity, is threaded.

[0030] With reference to Figs. 5 and 6, unthreaded rods 40 may alternatively be provided for use within the second and third embodiments 26' and 26'' of the first internal cavity. The unthreaded rods 40 are slidably received within the first cavity second and third embodiments 26' and 26''. With the exception of lacking external threads and a tool fitting, the unthreaded rods 40 are similar to the threaded rods 30 described above.

[0031] With reference again to Fig. 5, a generally rigid plug 50 is adapted for use with first internal cavity second embodiment 26'. The rigid plug 50 includes a plug shaft 52 and a plug head 54. An extraction member 56 is preferably provided. The extraction member 56 may be, for example, a string securely fixed to the plug head 54 and of sufficient length to extend well beyond (for example, six inches) the terminal end 12a of the pool cue 10, allowing a user to grasp the extraction member 56. The rigid plug 50 is preferably fabricated from a polymeric material. A diameter of the rigid plug 50 is sized to be slidably received in the first internal

cavity second embodiment 26' with a slight interference fit such that the rigid plug 50 may be inserted and removed from the cavity second embodiment 26' with a modest force (for example, 5 pounds), but the rigid plug 50 once inserted in the cavity 26' is retained absent application of a force in addition to gravity.

5 [0032] The cavity second embodiment 26' has a length indicated in Fig. 5 as $L_{26'}$. The length of the plug shaft 52 is indicated as L_{52} . The cumulative length of the unthreaded rods 40 is indicated as L_{40} . As discussed above, preferably three unthreaded rods 40 are provided, ranging in individual length from about one inch to about two inches. Thus, if two one inch unthreaded rods 40 and one two inch unthreaded rod 40 are provided, L_{40} can range from about
10 one inch to about four inches. If $L_{26'}$ is five inches, then multiple rigid plugs 50 having shaft lengths L_{52} of about one inch, two inches, three inches and four inches must be provided.

[0033] With reference now again to Fig. 6, a compressible plug 60 is adapted for use with first internal cavity third embodiment 26''. The compressible plug 60 includes a compressible shaft 62 and a head portion 68. The compressible shaft 62 may be fabricated from a highly
15 compressible material or alternatively may be fabricated using a spring 64 having a low spring constant. The spring 64 may be encased within a sleeve 66, fabricated, for example, from a flexible fabric material. The head portion 68 is preferably provided with an external thread on a threaded portion 68a, allowing the plug 60 to be installed within the cavity third embodiment 26'' by threaded engagement. The head portion 68 further preferably includes a head cap 68b
20 provided with a tool fitting (not shown) to facilitate installation and removal of the compressible plug 60.

[0034] Fig. 8 illustrates a first method 100 of tailoring the weight characteristics of a pool cue to preferences of an individual user. The method 100 comprises the steps of: providing a pool cue 10, 10' or 10'' as described herein, having a handle portion and a shaft portion, the
25 handle portion having a terminal end, and an internal cavity proximate the terminal end; providing a plurality of weights (30 (embodiment 10) or 40 (embodiments 10' and 10'')) removably installed within the internal cavity, and individually removing the weights to incrementally reduce the total weight of the pool cue to a desired level. The weights 30 or 40 are preferably installed at the time of manufacture but may also be installed by the retailer prior
30 to retail sale.

[0035] Fig. 7 illustrates a second method 200 of using the weighting system of the present invention. The second method 200 is particularly pertinent to the first embodiment pool cue 10

provided with the cavity first embodiment 26. The second method 200 comprises an initial step 210 of providing a pool cue 10 as described above herein and illustrated in Figs. 3 and 4. In a second step 220 a plurality of externally threaded rods 30 as described herein are provided. In a third step 230, a sufficient number of the plurality of externally threaded rods 30 are installed and positioned within the internal cavity first embodiment 26 to provide the pool cue 10 with weight and balance characteristics in accordance with the user's preferences. The threaded rods 30 are installed in the internal cavity first embodiment 26 using a screwdriver or similar tool having a head corresponding to the tool fitting 32.

[0036] To describe the second method 200 more particularly, at the time of retail sale, a consumer will request a pool cue with a given total desired weight. The retailer or purchaser will proceed to remove the end cap 20, add or remove the appropriate number of threaded rods 30 to obtain the desired weight, and further proceed to reinstall the end cap 20. The number or the position of the threaded rods 30 within the first internal cavity 26 may be subsequently adjusted to optimize the total weight and / or balance of the pool cue 10.

[0037] A third method 300 of tailoring weight characteristics of a pool cue to preferences of an individual user is illustrated in Fig. 9. The third method 300 is particularly pertinent to the pool cue second and third embodiments 10' and 10'' discussed above. The third method 300 comprises the steps of: providing a pool cue 10' or 10'' including a handle portion and a shaft portion, the handle having a terminal end. The pool cue 10' or 10'' further includes an internal cavity 26' or 26'', respectively, in the handle portion proximate the terminal end, the internal cavity having a closed end and an open end. A plug 50 or 60 is releasably received in the open end of the internal cavity 26' or 26'', respectively. A plurality of weight rods 40 are provided. The plug 50 or 60 is removed from the open end of the internal cavity 26' or 26'', respectively. A sufficient number of the plurality of weight rods 40 are installed within the internal cavity 26' or 26'' to provide the pool cue with the weight characteristics in accordance with the user's preferences. The plug 50 or 60 is replaced to secure the weight rods 40 within the internal cavity 26' or 26'', respectively.

[0038] From the foregoing it can be seen that the present invention comprises a pool cue which provides multiple weights installed within a handle of the pool cue. The number of weights within the handle may be adjusted to optimize the weight of the pool cue. It will be appreciated by those of ordinary skill in the art that modifications may be made to the above described embodiment without departing from the scope and spirit of the present invention.